

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Original) An apparatus for generating a two dimensional histological map of a cervix from a 3-dimensional hyperspectral data cube generated by scanning the cervix comprising:

an input processor constructed to:

normalize fluorescence spectral signals collected from the hyperspectral data cube,

extract pixel data from the spectral signals that is indicative of cervical tissue classification, and

compress the extracted pixel data;

a classifier in communication with said input processor that assigns a tissue classification to the pixel data; and

an image processor in communication with said classifier that generates a two dimensional image of the cervix from the pixel data, said two dimensional image including color-coded regions representing specific tissue classifications of the cervix.

2. (Original) An apparatus for generating a two dimensional histological map of a cervix from a 3-dimensional hyperspectral data cube generated by scanning the cervix comprising:

means for normalizing fluorescence spectral signals collected from the hyperspectral data cube;

means for extracting pixel data from the spectral signals, the pixel data being indicative of cervical tissue classification;

means for compressing the extracted pixel data;

means for assigning tissue classifications to the compressed data; and

means for generating a two dimensional image of the cervix from the compressed data, the two dimensional image including color-coded regions representing specific tissue classifications of the cervix.

3. (Original) A method for generating two dimensional image of a cervix from a three dimensional hyperspectral data cube generated by scanning the cervix, comprising:

normalizing fluorescence spectral signals collected from the hyperspectral data cube;

extracting pixel data from the spectral signals, the pixel data being indicative of cervical tissue classification;

compressing the extracted pixel data;

assigning tissue classifications to the compressed data; and
generating a two dimensional image of the cervix from the compressed data, the two dimensional image including color-coded regions representing specific tissue classifications of the cervix.

4. (Original) An article of manufacture comprising:
 - a computer usable medium having computer program code embodied therein for generating a two dimensional image of a cervix from a three dimensional hyperspectral data cube including:
 - a program code segment for causing a computer to normalize fluorescence spectral signals collected from the hyperspectral data cube;
 - a program code segment for causing the computer to extract pixel data from the spectral signals, the pixel data being indicative of cervical tissue classification;
 - a program code segment for causing the computer to compress the extracted pixel data;
 - a program code segment for causing the computer to assign tissue classifications to the compressed data; and
 - a program code segment for causing the computer to generate a two dimensional image of the cervix from the compressed data, the two dimensional image including color-coded regions representing specific tissue classifications of the cervix.

5. (New) An system for generating a two dimensional histological map of a cervix, the apparatus comprising:

a hyperspectral diagnostic imaging device constructed to scan the surface of the cervix with ultraviolet light to generate a 3-dimensional hyperspectral data cube;

an input processor constructed to:

normalize fluorescence spectral signals collected from the hyperspectral data cube,

extract pixel data from the spectral signals that is indicative of cervical tissue classification, and

compress the extracted pixel data;

a classifier in communication with said input processor that assigns a tissue classification to the pixel data; and

an image processor in communication with said classifier that generates a two dimensional image of the cervix from the pixel data, said two dimensional image including color-coded regions representing specific tissue classifications of the cervix.

6. (New) An apparatus as set forth in claim 1, wherein said input processor is constructed to normalize variations in the peak magnitude of the fluorescence spectral signals collected from the hyperspectral data cube by dividing each spectrum of the data cube by an area under the respective spectrum.

7. (New) An apparatus as set forth in claim 1, wherein said input processor is constructed to extract pixel the data from the spectral signals that is indicative of cervical tissue classification by using continuous wavelet transform techniques to generate a wavelet data matrix corresponding to an input spectral signal and using principle component analysis to compress the wavelet data matrix.

8. (New) A method as claimed in claim 3 wherein said normalizing process comprises dividing each spectrum of the data cube by an area under the respective spectrum.

9. (New) A method as claimed in claim 3 wherein said extracting process comprises performing continuous wavelet transform techniques to generate a wavelet data matrix corresponding to an input spectral signal.

10. (New) A method as claimed in claim 9 wherein said compressing process comprises performing principle component analysis to compress the wavelet data matrix.

11. (New) A method for classifying cervical tissue comprising:

generating a three dimensional hyperspectral data cube by scanning a subject cervix with ultraviolet light, wherein the hyperspectral data cube comprises a plurality of two-dimensional fluorescence spectral signals;

normalizing the fluorescence spectral signals of the hyperspectral data cube by dividing each data point of the fluorescence spectral signals by the area under the respective fluorescence spectral signal;

extracting pixel data from the normalized spectral signals, the pixel data being indicative of cervical tissue classification;

compressing the extracted pixel data;

assigning tissue classifications to the compressed data; and

generating a two dimensional image of the cervix from the compressed data, the two dimensional image providing an indication of specific tissue classifications of the cervix.